Seminar in Tropical Medicine: One Health

Baylor College of Medicine, National School of Tropical Medicine

Spring 2015

Course Codes:
GS-TM-466 (BCM)
BIOE 510/GLHT 510 (Rice)

Course Coordinator:
Peter Hotez, M.D., Ph.D.
Dean
National School of Tropical Medicine
Baylor College of Medicine

Course Contact:
Simone Tiu, CPA, Ed.D.
Academic Administrator
National School of Tropical Medicine
Baylor College of Medicine
713-798-4455
tiu@bcm.edu

Class Days/Time:

March 14 – May 2, Thursdays, 5:30pm – 7:00pm

Classroom:

BRC 282
Bioscience Research Collaborative, 6500 Main Street

Credits:

1 credit Pass/Fail

Course Summary:

This course consists of a series of weekly lectures on a topic in tropical medicine. Lectures will convey different themes in tropical medicine from one year to the next, with the theme reflected in the latter portion of the course title. The Term 4, 2013 course will be delivered by a selection on Texas Medical Center faculty on the theme of One Health, the collaborative effort of multiple disciplines working together to attain optimal health for people, animals, and the environment.

Goals and Learning Objectives:

By the end of the course, students will gain:

- Knowledge about neglected tropical diseases.
- Knowledge of diagnosis and treatment of infectious diseases.
- Knowledge of basic policy debate surrounding the public/global health issues.

Grading Policy:

The course will be graded Pass/Fail. To pass the course, students must attend seven of the eight lectures AND achieve a score of 70%.

Attendance and Participation (50 points): Students must attend seven of the eight lectures.

Quizzes (50 points): Quizzes are based on lecture presentation and will be given at the end of each lecture.

Lecture Outline:

Mar 14
Kathryn Jones
Lecture Title: Development of a Therapeutic Vaccine for Chagas Disease

Kathryn Jones, D.V.M., Ph.D. is an Assistant Professor in the Departments of Pediatrics, Section of Tropical Medicine, and Molecular Virology and Microbiology at Baylor College of Medicine. She is also a member of the National School of Tropical Medicine at Baylor College of Medicine and serves as the Laboratory Coordinator for NSTM. Dr. Jones received her Doctor of Veterinary Medicine from Michigan State University. She also obtained her PhD from Michigan State University in the Department of Microbiology and Molecular Genetics where she studied the immune response to *Trichuris suis* and *Campylobacter jejuni* in a pig model of infection. Dr. Jones pursued post-doctoral studies at The George Washington University in the Department of Microbiology, Immunology and Tropical Medicine where she studied the immune response to *Leishmania major* in a mouse model of infection. After completing her post-doctoral studies, Dr. Jones served as the Attending Veterinarian for the Animal Research Facility at the George Washington University and concurrently as the Project Veterinarian for the Human Hookworm

Vaccine Initiative. Dr. Jones' current research projects include animal models of hookworm infection and Chagas disease, and immune responses to vaccination.

Mar 21
Jose Serpa-Alvarez
Lecture Title: Neurocysticercosis: A simplified approach to diagnosis and treatment

Jose A. Serpa, M.D., M.S., CTropMed, is the associate director of medical education for the National School of Tropical Medicine at Baylor College of Medicine. He also is an assistant professor of medicine at BCM, director of the Effie and Wofford Cain Foundation, International Medicine Program; co-director of the international health track at the college; and associate program director of the Infectious Disease Fellowship at BCM. Serpa received his medical degree from Universidad Peruana Cayetano Heredia in Lima, Peru. He completed a research fellowship at the Institute of Tropical Medicine Alexander von Humboldt in Lima, and residency training at Henry Ford Hospital in Detroit. He also completed a fellowship in infectious diseases at BCM as well as the Clinical Scientist Training Program, where he earned a master's of science. He is a specialist in tropical medicine and infectious diseases and has a research interest in neurocysticercosis and other infectious diseases issues.

Mar 28
Peter J. Hotez
Lecture Title: "The Neglected Tropical Diseases"

Peter J. Hotez, M.D., Ph.D., is the founding Dean of the National School of Tropical Medicine and Professor of Pediatrics and Molecular Virology & Microbiology at Baylor College of Medicine where he is also chief of a new Section of Pediatric Tropical Medicine and the Texas Children's Hospital Endowed Chair of Tropical Pediatrics. He is also President of the Sabin Vaccine Institute, Director of the Texas Children's Hospital Center for Vaccine Development and the Baker Institute Fellow in Disease and Poverty at Rice University.

April 4
Herbert L. DuPont
Lecture Title: Emerging Infectious Diseases and Zoonones: Why They are Threatening World Public Health

Herbert L. DuPont, MD, MACP, is Chief, Internal Medicine Service, St. Luke's Episcopal Hospital; The Baylor College of Medicine H. Irving Schweppe, Jr., M.D. Chair in Internal Medicine and Vice Chairman, Department of Medicine; Director, Center for Infectious Diseases and Professor of Infectious Diseases, University of Texas School of Public Health; The Mary W. Kelsey Chair of Medical Sciences, The University of Texas-Houston Medical School, Houston, Texas; Professor of Medicine, Graduate Schools of Biomedical Sciences, The University of Texas-Houston and Baylor College of Medicine; Adjunct Professor, The University of Texas MD Anderson Cancer Center; President, Kelsey Research Foundation.

April 11
Kristy O. Murray
Lecture Title: Epidemiology and Clinical Investigation of West Nile in Texas

Kristy O. Murray, DVM, PhD, is Associate Professor of Pediatrics in Pediatric Tropical Medicine at Baylor College of Medicine and Vice Chair for Research for the Department of Pediatrics. Prior to joining the faculty at Baylor, Dr. Murray was an Associate Professor of Epidemiology for the Center for Infectious Diseases at the University of Texas Health Science Center at Houston, School of Public Health (2002-2012). Her research over the past 10 years has been focused on vector-borne and zoonotic diseases, including West Nile virus, dengue, St. Louis encephalitis, eastern equine encephalitis virus, Rocky Mountain Spotted Fever, Chagas, and rabies. Dr. Murray serves on the editorial board of the journal *Epidemiology and Infection* and has authored more than 40 scientific and technical papers.

April 18
Umair Shah
Lecture Title: Social Determinants of Health and Achieving Global Health Equity

Umair, A. Shah, M.D., M.P.H., serves as Deputy Director and Director of Disease Control & Clinical Prevention at Harris County Public Health & Environmental Services (HCPHES). Previously he was an emergency department physician at Houston's Michael E. DeBakey VA Medical Center and Chief Medical Officer at Galveston County Health District. He received his B.A. (philosophy) from Vanderbilt University; M.D. from University of Toledo Health Science Center; before completing Internal Medicine residency, Primary Care/General Medicine fellowship, and M.P.H. at The University of Texas Health Science Center. His focus areas include global/refugee health; health equity; healthcare management; and emergency responses including TS Allison; Hurricane Katrina, Rita, Ike; novel H1N1; and post-earthquakes in Kashmir and Haiti. In addition to global work at the World Health Organization, he has provided leadership through American Public Health Association, Centers for Disease Control & Prevention, Institute of Medicine, and National Association of County & City Health Officials.

April 25
Rojelio Mejia
Lecture Title: Tropical medicine: no reason to travel, let the world come to you.

Rojelio Mejia, M.D. is assistant professor of Infectious Diseases at the National School of Tropical Medicine at Baylor College of Medicine. He is a research clinician practicing at St. Luke's Episcopal Hospital, The Methodist Hospital and Ben Taub General Hospital. He also attends at Travel and Tropical Medicine Clinics. Rojelio received his medical degree from Michigan State University-College of Human Medicine in East Lansing, Michigan. He completed a Research Pathway Internal Medicine training program at the University of Virginia Hospital in Charlottesville, Virginia and went on to an Infectious Diseases Fellowship at the National Institute of Allergy and Infectious Diseases, National Institutes of Health in Bethesda, Maryland. He finished his lab experience in the Helminth Immunology Section at the Laboratory of Parasitic Diseases. His research interests include molecular diagnostics of neglected tropical

diseases and host defense mechanisms, specifically on gastrointestinal parasites such as Strongyloides. Locations of research and collaborations include Ecuador, Argentina and Brazil.

May 2
Paul Ling
Lecture Title: From Bench to Barn; Combating Fatal Acute Hemorrhagic Disease Caused by Elephant Endotheliotropic Herpesvirus (EEHV)

Paul Ling, Ph.D. is associate professor of Department of Molecular Virology and Microbiology of Baylor College of Medicine. Dr. Ling obtained his Ph.D. in microbiology in Uniformed Services University of the Health Sciences Bethesda MD; he also studied virology and oncology in Johns Hopkins School of Medicine as a research associate. He published over 45 peer-reviewed articles. His research interest focuses on Elephant Endotheliotropic Herpesviruses. He is a member of the American Cancer Society peer review group.

Readings

Lecture Date: March 14
Lecturer: Dr. Kathryn Jones
Topic: Development of a Therapeutic Vaccine for Chagas Disease

1. Rassi A Jr, Rassi A, Marin-Neto JA. Chagas disease. Lancet. 2010 Apr 17;375(9723):1388-402. doi: 10.1016/S0140-6736(10)60061-X. Review. PubMed PMID: 20399979.

2. Vázquez-Chagoyán JC, Gupta S, Garg NJ. Vaccine development against Trypanosoma cruzi and Chagas disease. Adv Parasitol. 2011;75:121-46. doi: 10.1016/B978-0-12-385863-4.00006-X. Review. PubMed PMID: 21820554.

3. Lee BY, Bacon KM, Wateska AR, Bottazzi ME, Dumonteil E, Hotez PJ. Modeling the economic value of a Chagas' disease therapeutic vaccine. Hum Vaccin Immunother. 2012 Sep 1;8(9):1293-301. doi: 10.4161/hv.20966. Epub 2012 Aug 16. PubMed PMID: 22894964.

4. Sarkar S, Strutz SE, Frank DM, Rivaldi CL, Sissel B, Sánchez-Cordero V. Chagas disease risk in Texas. PLoS Negl Trop Dis. 2010 Oct 5;4(10). doi:pii: e836. 10.1371/journal.pntd.0000836. PubMed PMID: 20957148; PubMed Central PMCID: PMC2950149.

5. Hotez PJ, Bottazzi ME, Franco-Paredes C, Ault SK, Periago MR. The neglected tropical diseases of Latin America and the Caribbean: a review of disease burden and distribution and a roadmap for control and elimination. PLoS Negl Trop Dis. 2008 Sep 24;2(9):e300. doi: 10.1371/journal.pntd.0000300. PubMed PMID: 18820747; PubMed Central PMCID: PMC2553488.

Lecture Date: March 21, 2013
Lecturer: Dr. Jose Serpa-Alvarez
Title: Neurocysticercosis: A simplified approach to diagnosis and treatment

1. Nash, T.E. and H.H. Garcia, Diagnosis and treatment of neurocysticercosis. Nat Rev Neurol, 2011. 7(10): p. 584-94.

2. Del Brutto, O.H., et al., Proposed diagnostic criteria for neurocysticercosis. Neurology, 2001. 57(2): p. 177-83.

3. Nash, T. E., G. Singh, et al. (2006). "Treatment of neurocysticercosis: current status and future research needs." Neurology 67(7): 1120-1127.

Lecture Date: March 28, 2013
Lecturer: Dr. Peter Hotez
Title: "The Neglected Tropical Diseases"

1. Murray CJ, Vos T, Lozano R....Hotez PJ, et al. 2013. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions. 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 380: 2197-223.

2. Hotez PJ. 2012. Fighting neglected tropical diseases in the southern United States. BMJ 345: e6112.

3. Hotez P. 2011. Enlarging the "audacious goal": elimination of the world's high prevalence neglected tropical diseases. Vaccine 29 Suppl 4: D104-10.

4. Hotez PJ. Mistry N, Rubinstein J, Sachs JD. 2011. Integrating neglected tropical diseases into AIDS, tuberculosis, and malaria control. N Engl J Med 364: 2086-9.

5. Hotez PJ. 2010. A plan to defeat neglected tropical diseases. Sci Am 302: 90-4.

Lecture Date: April 4, 2013
Lecturer: Dr. Herbert L. DuPont
Title: Emerging Infectious Diseases and Zoonoses

1. Taylor LH, et al. Risk factors for human disease emergence. Phil Trans R Soc Lond. B 2001;356:983-9

2. Emerging zoonoses and pathogens of public health significance – an overview. Rev Sci Tech. 2004;23:453-42

3. Schlundt J, et al. Emerging food-borne zoonoses. Rev Sci Tech 2004;23:513-33

4. Blancou J, et al. Emerging or re-emerging bacterial zoonoses: factors of emergence, surveillance and control. Vet Res 2005;36:507-22

5. Flanagan ML, et al. Anticipating the species jump: surveillance for emerging viral threats. Zoonoses Publ Health 2012;59:155-63

Lecture Date: April 11, 2013
Lecturer: Dr. Kristy Murray
Title: Epidemiology and Clinical Investigation of West Nile in Texas

1. Murray KO, Walker CM, Gould E. The virology, epidemiology, and clinical impact of West Nile virus: a decade of advancements in research since its introduction into the Western Hemisphere. *Epidemiol Infection* 2011;139:807-817.

2. Nolan MS, Podoll AS, Hause AM, Akers KM, Finkel KW, Murray KO. Prevalence of Chronic kidney disease and progression of disease over time among patients enrolled in the Houston West Nile virus cohort. *PLoS One*. 2012;7(7):e40374.

3. Nolan MS, Schuermann J, Murray KO. West Nile virus infections among humans, Texas, USA, 2002-2011. *Emerging Infectious Diseases* 2013;19:137-139. Murray KO, Baraniuk S, Resnick M,

4. Arafat R, Kilborn C, Cain K, Shallenberger R, York T, Martinez D, Malkoff M, McNeely W, Elgawley N, Khuwaja SA. Clinical Investigation of Hospitalized West Nile Virus Cases in Houston, 2002-2004. *Vector-borne Zoonotic Diseases* 2008;8:167-174.

Lecture Date: April 18, 2013
Lecturer: Dr. Umair Shah
Title: Social Determinants of Health and Achieving Global Health Equity

1. WHO Commission on Social Determinants of Health.
http://www.who.int/social_determinants/thecommission/finalreport/en/index.html

2. Institute of Medicine, Board on Global Health, Committee on Emerging Microbial Threats to Health in the 21st Century. Microbial threats to health: Emergence, detection, and response [Internet]. Smolinski MS, Hamburg MA, Lederberg J, editors. Washington: National Academies Press; 2003. Available from:
http://books.nap.edu/openbook.php?record_id=10636

3. Healthy People 2020: http://www.healthypeople.gov/2020/default.aspx

4. Social determinants of health inequalities
Michael Marmot Lancet 2005; 365: 1099–104

   http://www.who.int/social_determinants/strategy/en/Marmot-Social%20determinants%20of%20health%20inqualities.pdf

5. Defining equity in health

   P Braveman, J Epidemiol Community Health2003;57:254-258

   http://jech.bmj.com/content/57/4/254.full

6. Achieving health equity: from root causes to fair outcomes
   Michael Marmot, on behalf of the Commission on Social Determinants of Health, Lancet 2007; 370: 1153–63

   http://www.v2020la.org/pub/PUBLICATIONS_BY_TOPICS/VARIOUS/Achieving%20health%20equity....pdf

Lecture Date: April 25, 2013
Lecturer: Dr. Rojelio Mejia
Title: Tropical medicine: no reason to travel, let the world come to you.

Summary: The world is becoming a smaller place, with airline travel being common, some of the most remote locations on earth have become relatively accessible. Travel not only brings excitement, but also exposure to unique pathogenic organisms. Business, leisure travelers and immigrants can present with vague symptoms to their physicians and present a diagnostic challenge. This lecture will discuss several actual clinical cases, diagnosis, treatment, epidemiology and prevention of parasitic diseases.

1. Murray HW. Leishmaniasis in the United States: treatment in 2012. Am J Trop Med Hyg. 2012 Mar;86(3):434-40. doi: 10.4269/ajtmh.2012.11-0682.

2. Kelly-Hope LA, Bockarie MJ, Molyneux DH. Loa loa ecology in central Africa: role of the Congo River system. PLoS Negl Trop Dis. 2012;6(6):e1605. doi: 10.1371/journal.pntd.0001605. Epub 2012 Jun 26.

3. Nutman TB. Lymphatic filariasis: new insights and prospects for control. Curr Opin Infect Dis. 2001 Oct;14(5):539-46.

Lecture Date: May 2, 2013
Lecturer: Dr. Paul Ling
Title: From Bench to Barn; Combating Fatal Acute Hemorrhagic Disease Caused by Elephant Endotheliotropic Herpesvirus (EEHV)

1. Richman, L.K., R.J. Montali, R.L. Garber, M.A. Kennedy, J. Lehnhardt, T. Hildebrandt, D. Schmitt, D. Hardy, D.J. Alcendor, and G.S. Hayward. 1999. Novel endotheliotropic herpesviruses fatal for Asian and African elephants. Science 283: 1171-1176.

2. Pellett, P.E. And B. Roizman. 2007. The family Herpesviridae: A Brief Intorduction. In: D.M. Knipe and P.M. Howley, (eds.). Fields' virology, 5th ed. Wolters Kluwer Health/Lippincott Williams & Wilkins, Philadelphia, Pennsylvania. Pp. 2480-2499.

3. Richman, LK, and Hayward GS. 2011. Elephant Herpesviruses.*In* Fowler's Zoo and Wild Animal Medicine: Current Therapy, R. E. M. a. M. Fowler, (ed.). Saunders, St. Louis. pp. 496 - 502.

4. Stanton, JJ, Zong JC, Latimer E, Tan J, Herron A, Hayward GS, and Ling PD. 2010. Detection of pathogenic elephant endotheliotropic herpesvirus in routine trunk washes from healthy adult Asian elephants (Elephas maximus) by use of a real-time quantitative polymerase chain reaction assay. American journal of veterinary research 71: 925-933.